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Franz Thoemmes

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EXAMINER

BOECKMANN, JASON J

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/564,226
Filing Date: May 31, 2006
Appellant(s): THOEMMES, FRANZ

Clifford Ulrich
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/15/2010 appealing from the Office action mailed 12/23/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 8, 10 and 14-22 are rejected and pending

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,382,532	French et al.	5-2002
US 2002/0185555	Kobayashi et al.	12-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 8, 10 and 14-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over French et al. (6,382,532), in view of Kobayshi et al. (US 2002/0185555)

French shows a fuel injector (10) comprising; a valve needle (42) an armature (30) forming an axially movable valve port together with the valve needle, a restoring spring (62) acting upon the armature, a magnetic coil (66) cooperating with the armature, a valve-seat body (22), a valve closure member (34) which forms a sealing seat with the valve seat body and; a valve sleeve (14) surrounding the armature and the valve needle, wherein an outer diameter and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar, wherein the radial cross section and the wall thickness of the inflow-side region are constant from the collar to a location axially beyond the valve needle in a direction opposite the discharge direction of the fuel; wherein the radial cross section and decreased wall thickness of the discharge-side region are constant from the collar to a discharge-side end of the valve sleeve, and wherein the constant decreased radial cross section and the wall thickness of the discharge-side region extend axially beyond the valve needle in both the discharge direction of the fuel and the direction opposite the discharge direction of the fuel, but does not specifically disclose that a wall thickness of the valve sleeve varying across its axial direction at the collar, wherein the wall thickness of the valve sleeve decreases in a discharge direction of a fuel.

However, Kobayshi et al. shows a fuel injector (1) comprising; a valve needle (26) an armature (7C) forming an axially movable valve port together with the valve

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needle (7A), a restoring spring (9) acting upon the armature, a magnetic coil (11) cooperating with the armature, a valve-seat body (5), a valve closure member (7B) which forms a sealing seat with the valve seat body and; a valve sleeve (22) surrounding the armature and the valve needle, a wall thickness of the valve sleeve varying across its axial direction wherein the wall the wall thickness of the valve sleeve decreases in a discharge direction of a fuel, wherein an outer diameter and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar (figure 4). Basically section B has a greater diameter and wall thickness than section A because it needs to be able to bear the remarkable pressure applied to it when a molten plastic is applied there onto under injection molding of the plastic cover 14.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to make the upper portion (the portion with a greater outside diameter) of the valve sleeve (14), of the fuel injector of French, have a greater wall thickness than the wall thickness of the bottom section (the section of smaller outer diameter) of the valve sleeve (14). It is noted that in both fuel injectors (French and Kobayshi et al.) the plastic sleeve (98 and 14 respectively) is over molded on the outside of the fuel injector. This modification would allow for the valve sleeve of French to be able to bear a higher pressure when a molten plastic is applied thereto when the plastic cover is made by injection molding, as taught by Kobayshi et al. (Paragraph 0037).

It is noted that the term “in order to limit noises emissions,” of line 13, is being considered a functional limitation and is given little or no patentable weight in an apparatus claim.

It is noted that the terms “having greater material strength” and “having lower material strength,” of lines 17 and 18 are being construed to mean having a greater strength. The term “material strength” is commonly used in the art to be a specific property of a material, not a property of the shape of the material. According to the figures and the applicant’s disclosure, it seems as if the applicant is using the term “material strength” to describe a property of the shape of the valve sleeve. This is acceptable because the applicant is allowed to be his own lexicographer, however, the examiner would like to make it clear on the record that the term difference in material strength claimed in lines 17 and 18, does not mean that a different material is being used for the different sections of the valve sleeve, but it is merely referring to the change of shape of the valve sleeve and how it affects the strength of the different sections of the valve sleeve.

Regarding claims 10 and 14, the wall thickness of the valve sleeve is about 0.5 mm in an inflow-side region and about 0.3 mm in a discharge-side region (paragraph 0038).

Regarding claims 15 and 16, French et al. shows a fuel injector having an intake pipe (70) that extends beyond the valve sleeve to span an axial distance between the valve sleeve and a seal (106) disposed in a region of central fuel supply, and a filter element (78) that is pressed into the valve sleeve between the electrical plug contact

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(86) and the discharge side region. The modification above does not affect these features.

Regarding claim 17, the fuel injector of French et al. as modified Kobayshi et al. by includes a filter (78) located between the electrical plug (86) and the discharge side region of the valve sleeve.

Regarding claim 18, the intake pipe of the fuel injector of French et al. as modified Kobayshi et al. radically contacts the seal.

Regarding claims 19-22, in the fuel injector of French et al. as modified Kobayshi et al. the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region; and the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve; and the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region; and the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve. These features are all present in the French injector and do not change when the cross sectional wall thickness of the upper section of the valve sleeve is increased due to the modification above.

(10) Response to Argument

The appellant argues the above 103 rejection of French et al. as modified Kobayshi et al. stating that there is no reason to increase the thickness of the upper portion of the valve sleeve 14 of French et al.; 1.) since the fuel injector of French et al. is already fully capable of withstanding the pressures associated with the over molding process; 2.) that the fuel injector of French et al. is already reinforced by extension tube 70, and 3.) that since the over mold is applied to the lower section of the valve sleeve as well as the upper section, there is no reason to thicken the upper section without thickening the lower section.

However, the examiner respectfully disagrees.

1.) First of all, it is noted that even though the fuel injector of French et al. is capable of withstanding the pressures of over molding, increasing the thickness of the valve sleeve of French et al. as taught by Kobayshi et al. will further increase the strength of said valve sleeve, thereby making the valve sleeve more suitable for withstanding the high pressures of the over molding process. Just because the injector of French et al. is capable of withstanding the pressures does not mean that it cannot, or should not, or can not, be reinforced by the teachings of Kobayshi et al. The examiner is merely using Kobayshi et al. to teach increasing the thickness of the upper portion of the valve sleeve of French et al. in order to make help the valve sleeve withstand high pressures of over molding as specifically taught by Kobayshi et al. (Paragraph 0037).

2.) Secondly, the extension tube does not extend along the entire length of the upper portion of the valve sleeve, and therefore it cannot support and strengthen the entire length of the upper portion of the valve sleeve. Again, even if the valve extension supports and reinforces the upper portion of the valve sleeve, it does not mean that the valve sleeve does not need any extra support by increasing its thickness as taught by Kobayshi et al..

3.) Lastly, it is noted that the fuel injector of Kobayshi et al. has over molding on both the upper section of the valve sleeve and the lower portion of the valve sleeve, but only the upper portion is made thicker to withstand higher pressures (fig 1). This is the same configuration that would occur if the proposed combination of French et al. in view of Kobayshi et al. was made. Again, increasing the thickness of the upper portion of the valve sleeve is intended to add extra strength and reinforcement to the upper portion of the valve sleeve, and is explicitly taught by Kobayshi et al. (paragraph 0037).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jason J Boeckmann/
Examiner, Art Unit 3752
8/11/2010

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Conferees:

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752

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Supervisory Patent Examiner, Art Unit 3754